

REMARKS

Claims 1-3, 5-11, 13-19, 21-24, 26-29 and 32-45 are pending and under consideration.

Claims 1, 9, 19, 24, 30 and 32 are the independent claims.

Claims 4, 12, 20, 25, 30 and 31 have been cancelled without prejudice to or disclaimer of the subject matter recited therein.

Claims 46-47 are pending and have been withdrawn.

Claims 1, 7-9, 16, 19, 21-24, 26-27, 32, 38 and 40-41 have been amended. No new matter is believed to have been added.

I. REJECTIONS UNDER 35 USC §112

A. Claims 30 and 31 stand rejected under 35 USC §112, first and second paragraphs. Claims 30 and 31 have been cancelled without prejudice or disclaimer and the rejection is now moot.

B. Claims 1-45 stand rejected under 35 U.S.C. § 112, second paragraph as failing to recite essential structural relationships. Claims 1, 9, 24 and 32 have been amended to incorporate matter present in various respective dependent claims which define the structural relationship of the method with the disc as briefly discussed with the Examiner during an informal telephone conference on January 5, 2005. No new matter is believed to have been added.

Applicants respectfully submit that claims 1-45 as amended fully comply with the requirements of 35 U.S.C. § 112, second paragraph.

C. Claims 1-8 and 32-41 stand rejected under 35 USC §112, second paragraph as failing to recite essential relationships, namely the link between a plurality of ECC blocks and a plurality of partitions.

Applicants respectfully submit that the terms objected to are clear and no ambiguity as to their relationship exists. The relationship between these features as claimed is that given an ECC block, the ECC block is then divided into a plurality of smaller pieces or partitions, as would be understood by one of ordinary skill in the art.

Additionally, Applicants respectfully submit that claims 1-8 and 32-41 as amended fully comply with the requirements of 35 U.S.C. § 112, second paragraph.

D. Claims 1-18 and 32-45 stand rejected under 35 USC §112, second paragraph as being indefinite with respect to "alternately" and "equally" as these words appear in the claims. Applicants respectfully traverse this rejection.

The Action states that alternately only works with respect to 2 ECC blocks. As an initial matter, claims 9-11, 13-18 and 42-45 should not have been rejected as claim 9 recites 2 ECC blocks.

Furthermore, Applicants respectfully submit that the Examiner is applying too narrow of a definition to the term "alternately." Alternately, as defined in the WORDSMYTH dictionary, means "to do in succession or rotation." More than two ECC blocks can be interleaved as claimed in succession or rotation. One partition is simply taken from each ECC block successively before a second partition is taken from the first ECC block again. This interpretation is further supported by the specification and drawings of the present application. The term "equally" is also not indefinite as this term is clear as written in the claims and when read in light of the specification. "Equally" simply refers to ensuring that partitions from all of the ECC blocks are taken in equal numbers. It is respectfully submitted that the amended claims are clear as written.

Applicants respectfully submit that claims 1-18 and 32-45 as amended fully comply with the requirements of 35 U.S.C. § 112, second paragraph.

E. Claims 3 and 11 stand rejected under 35 USC §112, second paragraph as having an unclear relationship between the sector and the ECC blocks and partitions.

Applicants respectfully submit that amended claims 1 and 9 provide the necessary relationship between the elements of the claims and that the claims fully comply with the requirements of 35 USC §112, second paragraph.

F. Claims 8, 16-18, 23, 27-29, 38 and 39 stand rejected under 35 USC §112, second paragraph. The variable d being a common divisor limits the possible values with respect to N_1 and N_2 and would avoid the example provided in the Action.

Applicants respectfully submit that the claims as amended fully comply with 35 USC §112, second paragraph.

G. Claims 19-23 stand rejected under 35 USC §112, second paragraph as being indefinite for an unclear structural relationship between a data extracting portion and the ECC blocks. It is respectfully submitted that amended claim 19 provides adequate description of the relationship. Specifically, the portioning portion divides the ECC blocks into a plurality of

partitions and then the data extracting portion pulls data from each of the partitions which are comprised of divided ECC blocks.

Applicants respectfully submit that amended claims 19 and 21-23 provide the necessary relationship between the elements of the claims and that the claims fully comply with the requirements of 35 USC §112, second paragraph.

H. Claims 19-29 stand rejected under 35 USC §112, second paragraph. For the reasons stated above, it is respectfully submitted that the claims as amended fully comply with the requirements of 35 USC §112, second paragraph.

II. REJECTION OF CLAIMS 1-45 UNDER 35 USC §101

Claims 1-45 stand rejected under 35 USC §101 as being directed to non-statutory subject matter. Applicants respectfully traverse this rejection and request reconsideration in light of the amended independent claims 1, 9, 19, 24 and 32.

Specifically, claims are considered non-statutory if the claims consist of solely mathematical operations without some claimed practical application. Such a rejection under 35 USC §101 is proper only when the claim is devoid of any limitation to a practical application in the technological arts. MPEP §2106. Applicants respectfully submit that such is not the case with respect to the pending claims. Applicants thank the Examiner for conducting an informal telephone conference to address some of these issues and discussing that several of the dependent claims contained statutory matter.

For example, claim 1 recites that the interleaved first recording block is modulated and recorded on the disc. This is clearly a practical application of managing the storage of information on optical discs. Similar recitations are found in the independent claims 9, 19, 24 and 32.

In view of the above, it is respectfully submitted that the rejection is overcome and should be withdrawn.

III. REJECTION OF CLAIMS 1-45 UNDER 35 USC §102(e) IN VIEW OF NODA (US Patent No. 6,216,245)

Applicants respectfully traverse this rejection for at least the following reasons.

Independent claim 1, as amended, recites, dividing each of a plurality of error correction code (ECC) blocks corresponding to the data into a plurality of partitions which are formed by

dividing each ECC block in row and column directions and interleaving the data from the plurality of the partitions so that partitions from each of the ECC blocks are alternately selected such that progression through the partitions of each ECC block occurs diagonally to generate a first recording block.

Noda fails to teach or suggest dividing each ECC block in row and column directions and interleaving the subdivided partitions in a diagonal manner.

Accordingly, Applicants respectfully assert that the rejection of claim 1 under 35 U.S.C. § 102 (e) should be withdrawn because Noda fails to teach or suggest each feature of independent claim 1, as amended.

Furthermore, Applicants respectfully assert that dependent claims 2-3, 5-8 and 41 are allowable at least because of their dependence from claim 1, and the reasons set forth above.

Independent claim 9, as amended, recites, dividing each of two error correction code (ECC) blocks in row and column directions to generate a plurality of partitions; generating a first recording block, the generating comprising interleaving the data from the partitions so that each of the ECC blocks is alternately selected; modulating the first recording block; and recording the modulated recording block on the optical disc.

As noted above, Noda fails to teach or suggest such division of the ECC blocks. The Action refers to column 1, lines 49-55 as teaching dividing each ECC block by a predetermined number of bytes in a column direction and row direction to achieve object blocks. However, Noda discloses that each whole ECC block consisting of the data block, the outer code parity and the inner code parity (see col. 1, lines 54-55) is interleaved by taking data out of each ECC block on a line basis and storing the line in a memory bank. One memory bank corresponds to each ECC block. Noda does not teach or suggest that subdivision of the ECC blocks, shown in FIG. 2A occurs on a column and row basis to form partitions as recited in claim 9. Further, Noda does not teach or suggest that each partition in a first ECC block is alternately interleaved with a partition from a second ECC block as recited in claim 9. Rather, Noda discloses that the data is interleaved on a row basis by combining the outputs of multiple memory banks. (See col. 2, lines 1-7).

Accordingly, Applicants respectfully assert that the rejection of claim 9 under 35 U.S.C. § 102 (e) should be withdrawn because Noda fails to teach or suggest each feature of amended independent claim 9.

Furthermore, Applicants respectfully assert that dependent claims 10-11, 13-18 and 42-

45 are allowable at least because of their dependence, either directly or indirectly, from claim 9 and the reasons set forth above.

Amended independent claim 19, recites a partitioning portion to divide each of the ECC blocks into a first unit in a row direction and a second unit in a column direction to generate a plurality of partitions, a data extracting portion to alternately extract data from the partitions, and a recording block generating portion to interleave the extracted data and generate a recording block.

Accordingly, Applicants respectfully assert that the rejection of claim 19 under 35 U.S.C. § 102 (e) should be withdrawn because Noda fails to teach or suggest each feature of amended independent claim 19 as noted above.

Furthermore, Applicants respectfully assert that amended dependent claims 21-23 are allowable at least because of their dependence from claim 19 and the reasons set forth above.

Amended independent claim 24 recites, an error correction code (ECC) encoder to generate two ECC blocks; an interleaver to divide each of the two ECC blocks by a first unit in a row direction and by a second unit in a column direction to generate a plurality of partitions, and to alternately extract data from the partitions, and to interleave the extracted data and thereby generate a recording block; a modulating part to modulate the recording block; and a recording part to record the modulated recording block on the optical disc.

For the reasons as set forth above, it is respectfully submitted that Noda fails to disclose all the limitations of amended claim 24.

Furthermore, Applicants respectfully assert that amended dependent claims 26 and 27-29 are allowable at least because of their dependence from claim 24 and the reasons set forth above.

Amended independent claim 32 recites, generating a plurality of error correction code (ECC) blocks, the ECC blocks comprising the data; dividing each of the ECC blocks into a plurality of partitions; interleaving the data from the partitions, comprising alternately selecting the partitions of each of the ECC blocks along diagonal paths; modulating the recording block; and recording the modulated recording block on a medium.

For the reasons as set forth above, it is respectfully submitted that Noda fails to disclose all the limitations of amended claim 32.

Furthermore, Applicants respectfully assert that amended dependent claims 33-39 and 40 are allowable at least because of their dependence from claim 32 and the reasons set forth

above.

CONCLUSION

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

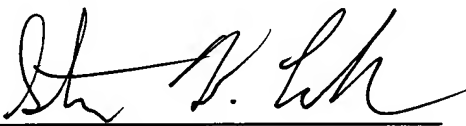
Finally, if there are any formal matters remaining after this response, the Examiner is respectfully requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 503333.

Respectfully submitted,

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